

REMARKS

Claims 1-5, 7, 8 and 10-11 are pending. By this Amendment, claims 1, 4, 7 and 10 are amended. No new matter is added.

I. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-5, 7-8 and 10-11 under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art (hereinafter "APA"), shown in Figure 11 in view of Ray et al. (hereinafter "Ray"), U.S. Patent No. 5,701,008. The rejection is respectfully traversed.

APA and Ray, individually or in combination, fail to disclose or suggest the adhesive over the step portion as a thin layer, the thin layer includes a height that is less than the height of the micro lenses, as recited in claims 1, 4, 7 and 10.

Although APA discloses an adhesive 48 over the sealing material 52 in the peripheral region LB, the adhesive over the step portion in APA is not a thin layer which includes a height that is less than the height of the micro lenses. In fact, APA teaches the adhesive over the step portion is the same height as the height of the micro lenses.

Ray fails to disclose or even mention an adhesive the covers the microlenses and step portion.

Accordingly, APA and Ray, individually or in combination, fail to disclose or suggest the adhesive over the step portion as a thin layer, the thin layer includes a height that is less than the height of the microlenses, as recited in claims 1, 4, 7 and 10.

Further, APA and Ray fail to disclose or suggest a step portion being substantially equal in height to the microlenses throughout a region completely overlapping the sealing material, the width of the step portion being wider than the entire width of the sealing material, and a transparent cover adhered to the lens array substrate with an adhesive that covers the micro lens and the step portion, as recited in claims 1 and 10, and similarly recited in claims 4 and 7.

The Office Action admits, on page 3, that APA does not disclose or teach the step portion. However, the Office Action attempts to overcome the admitted deficiency of APA by arguing that Ray teaches the step portion.

That is, the step portion in Ray is different from the structure of the claimed invention. In particular, the step portion in Ray is not wider than the entire width of the sealing material. In fact, the entire width of seal 8 is only as wide as the step portion (undesigned, but next to grooves 18 and grating columns 16) (Fig. 4), whereas Applicant's invention discloses the width of the step portion is wider than the entire width of the sealing material. Such configuration has significant advantages. For example, as described on page 15, lines 23-27 in the specification, by having the width of the step portion wider than the entire width of the sealing material allows the entire sealing material to be photo-cured uniformly.

Further, one of ordinary skill in the art would not have been motivated to combine the teachings of Ray with the teachings of APA with any expectation of success without destroying the invention. That is, Ray discloses that the seal 8 can be made from indium, tin, lead solder or vacuum epoxy with the height of the seal precisely determined (col. 3, lines 31-34). However, Applicant's claimed invention discloses a transparent cover adhered to the lens array substrate with an adhesive. Accordingly, by placing the IR window 10 on the seal 8 with the materials stated above, the transparent cover in Applicant's invention would crack or even break because of the hard surface sealing material of Ray and, in all likelihood, would not be adhered as Ray is adhering a metalloid IR window 10. Further, Ray discloses that the height of the solder seal 8 determines the distance between the microlenses and the corresponding detector pixels (col. 4, lines 47-49), which aligns the desired incoming IR radiation onto the pixels. However, Applicant's invention presses the first and second substrate together in the peripheral region located on the periphery of the region in which microlenses are formed so that the adhesive layer over the peripheral region does not function

as a cushion when the first substrate is adhered to the second substrate with a sealing material.

Further, APA discloses that the height of the adhesive over the step portion LB is greater than the height of the microlenses L, rather than the height of the adhesive over the step portion is less than the height of the micro lenses. Such configuration has significant advantages. For example, as described in page 4, line 24 - page 5, line 5, by providing a thin adhesive layer over the step portion, the adhesive layer will not function as a cushion when the first substrate is adhered to the second substrate with the sealing material. Further, by providing adhesive layer, warpage and/or waviness will not occur in the second substrate due to the stress from the adhesive layer, and therefore, the space between the first substrate and second substrate can be controlled with high accuracy, resulting in enhancement of display quality.

Accordingly, there is no motivation to modify the disclosure of Ray with the disclosure of APA in the manner asserted by the Office Action, as they have nothing in common other than focusing micro lenses. They operate in different areas of the EM spectrum and are therefore comprises of different of materials requiring different consideration. One would not look to Ray using primarily a metallic material to space a metalloid from a substrate to solve a compressibility problem with resultant distortions found in the APA references. In the absence of any motivation to do so, one of ordinary skill in the art would not have combined the references and then modify the resulting combination as asserted in the Office Action to obtain the claimed invention.

For at least these reasons, Applicant respectfully submits that APA and Ray, individually, or in any combination, fail to disclose or render obvious the features recited in independent claims 1, 4, 7 and 10. Claims 2-3, 5, 8 and 11 which depend from the independent claims are likewise distinguished over the applied art for at least the reasons

discussed as well as for the additional features they recite. Reconsideration withdrawal of the rejection under 35 U.S.C. § 103 are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-5, 7, 8, 10-11 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

David J. Cho
Registration No. 48,078

JAO:DJC/brc

Date: September 17, 2003

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
--